

Intramedullary Cysticercosis - A Case Report

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Abstract

Neurocysticercosis is the disease caused by the larval stage of the parasite *Taenia Solium* which is the most common parasitic infection of the nervous system which is the public health burden in Nepal. However, the involvement of the spinal cord i.e., intramedullary cysticercosis is very rare. The symptoms can vary from the backache or radicular pain to the development of cauda equina syndrome. We report a case of 21 years' male presented with history of low back pain and weakness of bilateral lower limbs. Magnetic resonance imaging (MRI) whole spine was done which shows hyper-intense lesion in T2 sequence at the level of 10th thoracic vertebra. Intramedullary cysticercosis have very good result after surgery. Patient had gained the motor power after decompression of spinal cord and the quality of life has been improved. Though it's a rare disease but in country like Nepal it could be presented as various other diseases which could be neglected or misdiagnosed.

Keywords: Cysticercosis; Intramedullary; Space Occupying Lesion (SOL); Cystic SOL

Abbreviations: CNS: Central Nervous System; NCC: Neurocysticercosis; SOL: Space Occupying Lesion; MRI: Magnetic Resonance Imaging

Introduction

Neurocysticercosis (NCC) is the most common central nervous system (CNS) infection caused by the larval stage of tapeworm *Taenia Solium*. This is the most common infection of CNS leading to seizure in Nepal. Cysticercosis is the disease in a people with poor hygiene. Though swine is one of the mediators for transmission of this disease but most people acquire this disease due to unhygienic food and water. However spinal cysticercosis is the rare presentation representing 1.2% to 5.8% of total patient with neurocysticercosis [1,2]. Spinal cysticercosis is also classified anatomically into different subtypes extra-spinal (vertebral) and intra-spinal (epidural, subdural, arachnoid or intramedullary) of which the intramedullary type is quite rare and only 53 cases were reported until 2010 [3-7]. Patient may have symptoms from vague pain to cauda equina syndrome. We had a patient 21 years old from southern part of Nepal and from low economic background came with the complain of lower back pain for 5 months and weakness of the bilateral lower limbs for 2 months. He also has features of cauda equina syndrome during the time of presentation.

Case Report

A 21-year-old male from Terai region who had a non-radicular complain at first. He had a back pain 5 months back which was associated with tingling and severe burning sensation of bilateral lower limbs. Suddenly he had weakness of bilateral lower limbs left>right. Then he develops numbness and bladder-bowel retention with decreased perineal sensation. His walking is restricted and he was wheelchair bound. He was treated as tuberculosis of the spinal cord and was prescribed anti-tuberculosis medicines since 3 months during the time of admission. Neurological examination reveals motor power of 3/5 on left leg and 4/5 on right leg. He has saddle hypoesthesia with decreased fine touch in bilateral leg. The jerks were also hyperexacerated. MRI of the spine was repeated which revealed small, well-defined, intramedullary peripherally enhancing cystic lesion in dorsal segment of spinal cord with expansion at D10-D11 level with intramedullary edema extending superiorly up to D3 and inferiorly up to conus medullaris suggestive of intramedullary cystic space occupying lesion (SOL) (Figures 1A and 1B and Figure 2). We didn't perform the serology tests and brain scan due to low socio economic condition of the patient and no symptoms regarding brain pathology. Rest complete

blood counts and bleeding profiles were normal. We operated this patient which shows the picture of NCC. Two cysts were present which was encapsulated in a single capsule intramedullary which was taken out and sent for histopathologic examination which confirmed intramedullary NCC (Figure 3). Patient symptoms were relieved a lot post-surgery. We did a follow up 3 months' post-surgery and he was able to walk with no features of cauda equina syndrome.

Discussion

Cysticercosis is the endemic disease of the areas like India, Brazil, Mexico, Peru and Korea [1,2]. The common clinical manifestation in the patient with intramedullary cysticercosis consists of pain, paraparesis, paresthesia, bladder and bowel incontinence, sexual dysfunction etc. [2,3]. Despite of these symptoms which appear, it mostly depends on the size of the cyst, number and location of the cyst [8]. The most common mode of infection of this disease is by ingesting undercooked pork meat containing cysticerci. Not only the pork consumers get infected by this disease but also the vegetarians contract infection from food preparers who are chronic carrier of tapeworm and do not wash their hands before cooking, and also by consumption of fruits and vegetables fertilized with material contaminated by human waste containing the eggs of *Taenia Solium* [9]. It usually occurs in the age group of 20-45 years old, 5 years old being the minimum age. About 6-50% of people dies due to cysticercosis [5]. In that patient with spinal cysticercosis, concurrent intracerebral involvement is nearly 100% [10].

Radiographic and laboratory investigation is very important for the diagnosis of this disease [5]. When a patient presented to the hospital with the history related to cysticercosis or they came from the endemic area and radiological examination like MRI revealed any kind of cystic spinal cord lesion then we should suspect intramedullary cysticercosis and further confirmed by serologic tests, subcutaneous nodules and CSF changes. The CSF examination of this kind of patient shows increased proteins, a low or normal glucose, moderate lymphocytic

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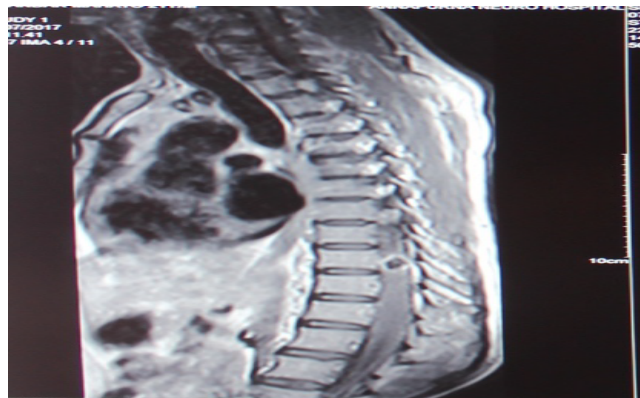


Figure 1a: T1 weighted imaging showing hypo-intense shadow at the level of D10 and D11.



Figure 1b: T2 weighted imaging showing hyper-intense shadow at the same level with signal change noted up to the level of D3 and up to conus below.

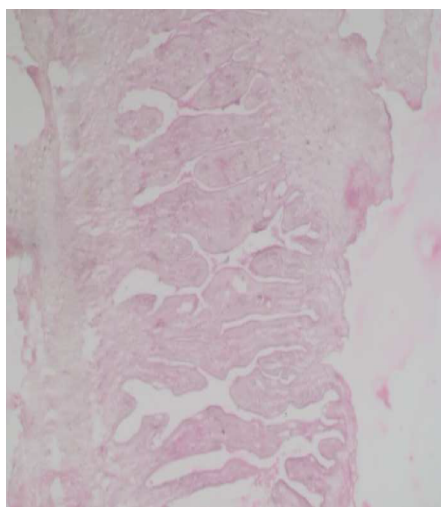


Figure 2: Axial T2 weighted imaging shows intramedullary lesion.

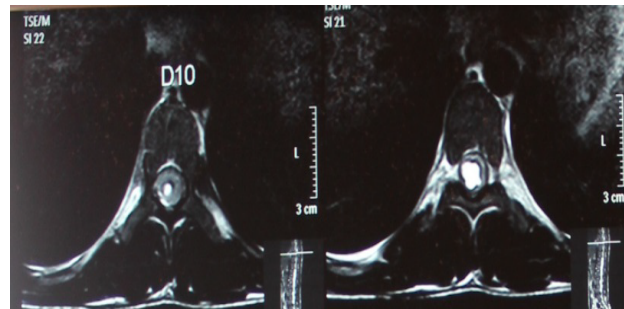


Figure 3: Histopathological picture showing cystic structure with irregular lining, few eosinophilic infiltration and scolex showing compatibility with intramedullary cysticercosis.

pleocytosis and eosinophilia. Cysticercal antibodies are found in CSF with ELISA or in serum by enzyme-linked immunoelectric transfer bolt assay which have good sensitivity and specificity in the diagnosis of cysticercosis [10,11]. MR imaging normally shows a cystic lesion with signal intensities which is similar to CSF on both T1-weighted and T2-weighted MRI. Scolex can also be seen in the MRI sometimes, which may be seen as iso-intense or hyper-intense lesion on T1-weighted sequence. Plain radiographs are less specific as sometimes calcifications of the cysts or soft tissues can be seen, which is quite rare. The cyst wall usually enhances on administration of the contrast material. An associated syrinx could be generally secondary to arachnoiditis, circulatory insufficiency or cord atrophy. When a patient presented with these kinds of symptoms is not from an endemic area and spinal cord symptoms are the first disease manifestations, these the diagnosis could be missed and can only become apparent at surgery. Resection of the cyst could only be the most confirmatory for the diagnosis and to relieve the symptoms due to mass effect. In those patients with intramedullary spinal cysticercosis, 60% to 75% improve neurologically just only after decompression of spinal cord. Although the cyst commonly occurs at one level, multilevel intramedullary cysts have also been reported [12]. Often, neurocysticercosis may mimic other cysts or some sorts of intradural extramedullary tumorous conditions. Some patient presenting to the emergency room with symptoms of bilateral lower limb weakness and cauda equina syndrome, who undergoes decompression of the spine as quickly as possible to prevent further neurologic deterioration. There are no clear guidelines as such for the medical management of spinal neurocysticercosis due to the rare occurrence of the disease. Mohanty et al. reported a 75% rate of satisfactory outcome after surgery and cysticidal treatment [13]. Medical treatment can also be done in neurologically stable patients with albendazole. Preoperative adjunctive treatment with albendazole is thought to be helpful to reduce the size of the lesion and thus could induce a clear plane of dissection during surgery. But when patient present with the symptoms of spinal cord compression due to the mass effect produced by the cyst, then surgical excision of the cysts and decompression of the cord in the form of laminectomy and removal of the mass would be the best choice. It should be done as early as possible to prevent irreversible neurologic damage [7,8].

Conclusion

Many people neglect the neurological symptoms due to the disease in country like Nepal where most of the population lives in rural areas. They come to the hospital when the neurological damage became irreversible and we couldn't reverse the damage even after surgery. We have concluded that this is the disease mostly of poor people whose oral hygiene is poor and unhygienic. Neurocysticercosis which mostly

presented with seizure can land up to more devastating complications when it has been presented as intramedullary cysticercosis. Early diagnosis and treatment (non-surgical or surgical) should be established to prevent undesirable and irreversible neurological damage.

Ethics Approval and Consent to Participate (Verbal)

Conflict of interest the authors report no conflict of interest.

Consent for Publication (Verbal)

Statement of informed consent to publish this case report including personal and medical information was obtained from patient.

Availability of Data and Materials

All data generated or analyzed during this study is available from the corresponding author on reasonable request.

Competing Interests

The authors declare that they have no competing interests.

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Authors' Contributions

BP: Performed clinical examinations, wrote the first draft of the manuscript. PS: Designed the protocol and performed clinical examinations, BP: Participated in designing the project and all investigations occurred under his supervision. All authors have revised the manuscript and approved the manuscript for submission.

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